Conservation Status Report

Sharp-shinned Hawk

Scientific Name:	*Accipiter striatus*	
French Name:	*Épervier brun*	
Spanish Name:	*Gavilán pajarero*	
Body length:	Female: 29-34 cm	Male: 24-27 cm
Wingspan:	Female: 58-65 cm	Male: 53-56 cm
Mass:	Female: 150-218 g	Male: 87-114 g

Breeding Range (words in italics are defined in the glossary):

Breeds in central, southcoastal, southeastern, and, rarely, western Alaska. Throughout Canada south of the treeline except southeastern Alberta, south Saskatchewan, and southwest Manitoba. In the western U.S., breeds from Canadian border south locally through northwestern states to central California, southern Nevada, southeastern Arizona, southern and east-central New Mexico, east to southeastern Wyoming, southwestern South Dakota, and central Colorado. In the eastern U.S., breeds from Canadian border south to northeastern Minnesota, northern Wisconsin, southern Michigan, northern Ohio, throughout New England and south through the Appalachians to portions of Virginia, North Carolina, South Carolina, Ohio, Indiana, Arkansas and locally as far west as the Dakotas. In the West Indies, breeds on Cuba and Hispaniola, and locally on Puerto Rico. In Mexico,

resident throughout and breeds primarily in montane areas of central Mexico. Also resident in central Honduras and northwestern Nicaragua. In South America, resident on forested slopes of western Venezuela, the Andes from Columbia to southern Bolivia, and central Brazil and Paraguay south to northern Argentina.

Winter Range: Winters south throughout the United States from southcoastal Alaska and British Columbia, central Idaho, southern Montana, southern South Dakota, southern Minnesota, central Wisconsin and Michigan, southern Ontario, northern New England and the southern Maritime provinces of Canada. In Central America, from northern Mexico to southern Baja California and western Panama, and in the West Indies to the Bahamas, Cuba, and Jamaica.

Type of Migrant: Partial

Nest Type: Broad, flat nest composed of conifer twigs, sometimes lined with bark or greenery.

Food Habits: Preys mainly upon small birds, but occasionally also takes small mammals and large insects.

Primary Flight Mode: A series of 3 to 6 quick, shallow wingbeats, separated by brief periods of gliding.

ECOLOGY

North America's smallest *Accipiter*, the slender Sharp-shinned Hawk has relatively short, rounded wings and a long, narrow tail. Females are notably larger than

males. Other notable physical characteristics include large eyes, elongated middle toes, and a laterally compressed keel on the leading edge of the leg, from which the species' common name is derived.

Sharp-shinned Hawks are secretive breeders that typically nest in dense forests, usually containing at least some conifers. Nests are typically 50-65 cm in diameter, constructed of small twigs, lined with bark or greenery, and placed on a horizontal branch near the main trunk of a tree. Because they are difficult to detect and survey on breeding grounds, Sharp-shinned Hawk populations are best indexed by migration counts. For example, whereas coefficients of variation (CVs) in counts of Sharp-shinned Hawks from 1974 to 2004 at seven migration watchsites in North America range from 15–25% of the mean count, BBSs for the same geographic region have a CV of 68%.

The sharpshin's diet is composed primarily of small songbirds, although the species sometimes takes birds as large as American Robins (*Turdus migratorius*) and various jays (e.g., *Cyanocitta* sp.) (Storer 1966, Duncan 1980, Joy et al. 1994). Small mammals and large insects make up approximately 10% of the diet. Sharp-shinned Hawks hunt from perches and from low-level flapping flight, darting rapidly towards their target. They often use natural and manmade structures to conceal their approach from potential prey, and in human-dominated landscapes, are increasingly common visitors to winter bird feeders, where they prey on birds attracted to the feeders (Dunn and Tessaglia 1994). Individuals usually pluck their prey prior to feeding, and "plucking posts" can be found on tree trunks, stumps, and fence posts, often near the nest.

The Sharp-shinned Hawk is a *partial migrant* with some individuals migrating whereas others remain on the breeding range year-round. Northern populations tend to

be more migratory than populations breeding to the south. In western North America, the species exhibits a chain migration pattern with northern populations typically passsing through later in autumn and wintering farther north than southern breeders (Smith et al. 2003).

POPULATION STATUS

An estimated 53% (583,000) of the global population of Sharp-shinned Hawks nest in North America's forests (Appendix B, Table 1). Data from *raptor migration counts*, Breeding Bird Surveys (*BBSs),* and Christmas Bird Counts (*CBCs)* indicate that populations of Sharp-shinned Hawks have (1) become less migratory and possibly also declined in some areas of northeastern North America since 1974; (2) increased slightly in western North America since the early 1980s, but declined since the onset of regional drought in the late 1990s; and (3) declined throughout the area surrounding the Gulf of Mexico since 1995.

Eastern North America

Historic analyses. Bednarz et al. (1990) reported a *statistically significant* increase in counts of Sharp-shinned Hawks at Hawk Mountain Sanctuary from 1934 to 1942, and a non-significant increase for the period 1971 to 1986, but no estimates were made of the rates of change. In a study of six *raptor migration counts* in eastern North America, Titus and Fuller (1990) reported a non-significant regional increasing trend of 0.4% per year from 1972 to 1987. Hussell and Brown (1992) reported that counts of Sharp-shinned Hawks at Hawk Ridge Bird Observatory declined non-significantly (-0.8% per year) from 1974 to 1989, while those at Grimsby, Ontario (a spring count) increased a *statistically significant* 4.8% per year from 1975 to 1990. At Cedar Grove, Wisconsin,

Mueller et al. (2001) reported a *statistically significant* increase in counts from 1936 to 1999, but no significant trend from 1951 to 1999.

Recent analyses. Raptor migration counts, BBSs, and CBCs provide conflicting evidence of population changes in the Sharp-shinned Hawk in northeastern North America since 1974. From 1974 to 2004, migration counts declined a *statistically significant* 1.1 % per year ($P \leq 0.01$) at Hawk Mountain Sanctuary, Pennsylvania and 4.5 % per year ($P \leq 0.01$) at Cape May Bird Observatory, New Jersey. Lighthouse Point, in coastal Connecticut, recorded a statistically significant increase of 1.8% per year ($P \leq 0.01$) during this period. Other eastern and midwestern migration watchsites recorded the following non-significant trends from 1974–2004: Montclair Hawkwatch, New Jersey, 1.4 % per year; Waggoner's Gap, Pennsylvania, -0.6 % per year; Holiday Beach Migration Observatory, Ontario, -0.5 % per year; and Hawk Ridge Bird Observatory, Minnesota, 0.7 % per year.

From 1994 to 2004, statistically significant declines were recorded at Cape May Point (-9.3% per year, $P < 0.05$) and Hawk Mountain Sanctuary (-3.7% per year, $P \leq 0.01$). Non-significant declines were recorded at Montclair Hawkwatch (-0.5% per year), Waggoner's Gap (-0.6% per year), Holiday Beach (-2.7% per year), and Hawk Ridge Bird Observatory (-1.8% per year). A non-significant increase was recorded at l'Observatoire d'oiseaux de Tadoussac, Quebec (0.9% per year), and no net change was detected during this period at Lighthouse Point (0.0% per year) (Fig. 1). Continued population change at the 1994–2004 rates will lead to a 50% increase of Sharp-shinned Hawk source populations in approximately 77 years at Tadoussac, and 50% declines in 7

years at Cape May, 139 years at Montclair, 19 years at Hawk Mountain, 116 years at Waggoner's Gap, 26 years at Holiday Beach, and 39 years at Hawk Ridge.

BBSs show a non-significant increase of 3.0 % per year in Sharp-shinned Hawk populations in northeastern North America (Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, New Brunswick, Nova Scotia, Ontario, and Quebec east of 79° W), which includes the areas from which the seven raptor migration counts receive migrants, from 1976 to 2003. However, the BBS survey does not adequately sample this secretive forest species and any trends should be considered unreliable (Sauer et al 2004).

CBC data for 1974–2004 (National Audubon Society 2002) *indicates statistically significant* increases of 2.1% per year in the southeastern United States (Delaware, Florida, Georgia, Kentucky, Maryland, North Carolina, South Carolina, Tennessee, Virginia, West Virginia) and 5.4% per year in the northeastern United States and Canadian provinces (Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, New Brunswick, Nova Scotia, Ontario, and Quebec).

In sum, the differences in trend estimates from the seven eastern/midwestern watchsites highlight the importance of using several raptor migration counts within a geographic region when attempting to identify population trends. In the case of the Sharp-shinned Hawk, numbers have declined at Cape May, Hawk Mountain, and Waggoner's Gap, but increased at four other migration watchsites. The decline in numbers at Cape May might indicate declined reproductive success, as most individuals counted at Cape May Point are juveniles. Recoveries of birds banded on migration

indicate that there is a large degree of overlap in the geographic origin of migrants passing Cape May and Hawk Mountain, with Hawk Mountain counting a greater proportion of adults. The qualitative agreement in trends at the two watchsites is therefore not surprising. Different trends at Montclair (coastal plain) and Lighthouse Point (coastal New England) suggest that there is no single process affecting counts on a regional scale. Non-significant trends farther to the west indicate that breeding populations north of these watchsites have been relatively stable for the last 30 years. One possible explanation for the eastern North America pattern is a decline in the more migratory northern population simultaneous with an increase in less migratory eastern birds found in Mid-Atlantic states. Alternatively, the discrepancy between migration trends and those from CBCs may be due to migratory *short-stopping* (see Viverette et al. 1996). A significant decline in counts of this species in the Florida Keys (see below) is consistent with both of these hypotheses.

Western North America

Historic analyses. Hoffman and Smith (2003) reported a statistically significant increase in migrating Sharp-shinned Hawks from 1983 to 2001 at the Goshute Mountains, Nevada, and non-significant trends in the Wellsville Mountains, Utah (1987–2001), at Lipan Point, Arizona (1991–2001), in the Bridger Mountains, Montana (1992–2001), in the Manzano Mountains, New Mexico (1985–2001), and in the Sandia Mountains, New Mexico (spring 1985–2001). They noted, however, that counts at most of these sites declined noticeably from 1998–2001.

Recent analyses. Raptor migration counts, BBSs, and CBCs indicate mostly increasing trends for Sharp-shinned Hawks in the western United States between the mid-

1980s and late 1990s, but mostly declines since then in the interior West coinciding with the occurrence of widespread drought. In the Goshute Mountains, Nevada, a marginally significant ($0.05 < P \leq 0.10$) long-term increase was recorded from 1983 to 2005 (1.7% per year, $P = 0.07$). Between 1983 and 1997, prior to the drought and coincident with a wet El Nino cycle, a significant 7.0% per year increase occurred in the Goshutes, however, after that a significant 8.3% per year decline occurred ($P < 0.01$ in both cases). In the Wellsville Mountains, Utah, a marginally significant long-term decline was recorded from 1987 to 2004 (-1.7% per year, $P = 0.09$). At this watchsite, there was no significant trend 1987 to 1997, but a significant 5.7% per year decline after that ($P < 0.05$). At Lipan Point, Arizona, a significant 3.4% per year long-term decline occurred from 1991–2005 ($P \leq 0.05$), with a particularly sharp drop-off occurring since 2003. In the Bridger Mountains, Montana, no significant overall trends emerged, but the estimated rate of change between 1992 and 1997 was +5.9% per year, whereas the estimated rate of change between 1998 and 2005 was -6.3% per year. The one prominent exception to this predominant pattern was a significant and continuing long-term increase from 1985 to 2005 in the Manzano Mountains, New Mexico (2.2% per year, $P \leq 0.05$).

Other shorter-term migration count datasets recorded a statistically significant 12.8% per year decline at Chelan Ridge, Washington (1998-2005, $P \leq 0.05$), non-significant declines at Bonney Butte, Oregon (1995–2005, -0.1% per year), and Yaki Point, Arizona (1997-2005; -2.5% per year), and a non-significant, increase of 0.7% per year at Boise Ridge, Idaho between 1995 and 2005 (Fig. 1).

BBSs indicate a non-significant, long-term increase of 1.5% per year from 1983 to 2005 (but see above), and a non-significant recent increase (1995-2005) of 2.2% per

year in the BBS western region (Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, western Montana, western Wyoming, western Colorado, western New Mexico, British Columbia; Sauer et al. 2004).

CBC data (National Audubon Society 2002) for the western United States and Canada (Alaska, Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Alberta, British Columbia, Northwest Territories, Yukon Territory) indicate that wintering Sharp-shinned Hawk populations increased significantly (0.7% per year, $P \leq 0.05$) from 1983 to 2005, but a slight, non-significant decline occurred between 1995 and 2005 (-1.0% per year).

In sum, it appears that western Sharp-shinned Hawks fared well between the 1980s and mid-1990s, increasing at gradually across most monitored sites. Signs of probable stress then began to appear in most counts as widespread drought set in beginning in 1999; the major exception being a long-term and continuing significant increase in the Manzano Mountains. This suggests that populations in the southern Rocky Mountains remained healthier while northern Rocky Mountain and Intermountain populations were impacted by drought. Most datasets also suggested a potential return to increasing patterns in 2004 and 2005 as more favorable moisture conditions re-emerged in many areas Continuing recent declines in the central Great Basin in the Goshute Mountains and farther south in the Grand Canyon may reflect lingering, drought-related effects of hypothesized route shifts; i.e., that the drought may have driven migrants to avoid the xeric Great Basin in favor of diverting west to follow the comparatively mesic Sierra–Cascade range.

Gulf of Mexico

Recent analyses. From 1995 to 2005, raptor migration counts suggested declines in numbers of Sharp-shinned Hawks throughout the region. A statistically significant decline occurred at the Florida Keys (1999-2005, -12.8% per year, $P \leq 0.01$), non-significant declines were recorded at Smith Point, Texas (1997-2005, -4.2% per year) and Corpus Christi, Texas (1997-2005, -2.8% per year), and a marginally significant decline occurred at Veracruz, Mexico (1995-2005, -7.5% per year, $P = 0.10$). Confidence intervals for the trend estimates were quite broad, due primarily to the short time series available for analysis, but the high magnitudes of the estimates suggest that the declines are real and that power to detect trends will increase as longer-term counts become available. The strong negative trend at the Florida Keys agrees with recent trends in the Northeast (see above), and suggests overlap in the populations sampled by these watshsites.

HISTORIC CONSERVATION CONCERN

Despite its small size, the Sharp-shinned Hawk was heavily persecuted in the early 20th century, primarily because it was perceived as a vicious enemy of songbirds. This view of North America's smallest accipiter was promoted even by respected ornithologists (e.g., Sutton 1928), and thousands of Sharp-shinned Hawks were shot annually while migrating past concentration points such as Hawk Mountain, Pennsylvania and Cape May Point, New Jersey (Stone 1937, Broun 1949). With the passage of protective legislation, most notably the Migratory Bird Treaty Act (amended to include raptors in 1972), shooting ceased to be a significant source of mortality. The misuse of pesticides (particularly *DDT*) also has been cited as a cause of declines in migration counts from the 1940s to early 1970s (Bednarz et al. 1990).

CURRENT STATUS AND CONCERNS

Recent declines in migration counts in the late 1980s and early 1990s after increases in the 1970s and early 1980s have been attributed to pesticides, natural population cycles, aging forests, declining populations of Neotropical migrant songbirds, migratory short-stopping, and cycles of spruce budworm infestation in the boreal forests of eastern Canada (Duncan 1996, Viverette et al. 1996, Wood et al 1996, Kirk and Hyslop 1998, Bolgiano 2006). Our analyses suggest that there is no consistent geographic pattern of population trajectories for Sharp-shinned Hawks in northeastern North America, and no single explanation likely explains changes in counts at all migration watchsites.

Global, United States, and Canadian populations of Sharp-shinned Hawks are considered 'secure' (Appendix B, Table 1). In the breeding range monitored by raptor migration counts in northeastern North America, the Sharp-shinned Hawk is considered secure in tow of the states and provinces, apparently secure in six, vulnerable in four, imperiled in two, and critically imperiled in one (New Brunswick) (NatureServe 2006, Appendix B, Table 2). In the breeding range monitored by raptor migration counts in western North America, the Sharp-shinned Hawk is considered secure in two of the states and provinces, apparently secure in nine, vulnerable in three, and is not ranked or currently under review in one of the states and provinces (NatureServe 2006, appendix B, Table 2). Although not a species of concern in any Bird Conservation Region, some south and south-central states not sampled by these migration counts list the Sharp-shinned Hawk as critically imperiled (e.g., Illinois, Kansas, Louisiana, Maryland, Mississippi) (Appendix B, Table 2b). Kirk and Hyslop (1998) rated the species possibly

declining in Atlantic Canada due to spruce budworm population cycles, acid rain, changes in insect abundance, and organochlorine contaminants. Blood samples of migrant Sharp-shinned Hawks collected during early 1990s showed some individuals carried organochlorine loads that might impede reproduction (Wood et al.1996). Throughout Canada, breeding season surveys suggest stable or increasing trends; however, BBS data are considered unreliable for this species.

SUMMARY

Sharp-shinned Hawk populations may have declined in eastern North America over the last 20-30 years, as suggested by declines in migration counts in the Northeast and near the Gulf of Mexico (particularly the Florida Keys). Evidence from CBCs, however, suggests that the declining migration counts may be due, at least partially, to migratory short-stopping. Populations in western North America have generally increased in the last 20 years, but migration monitoring and other surveys suggest recent declines that coincide with widespread drought in the region.

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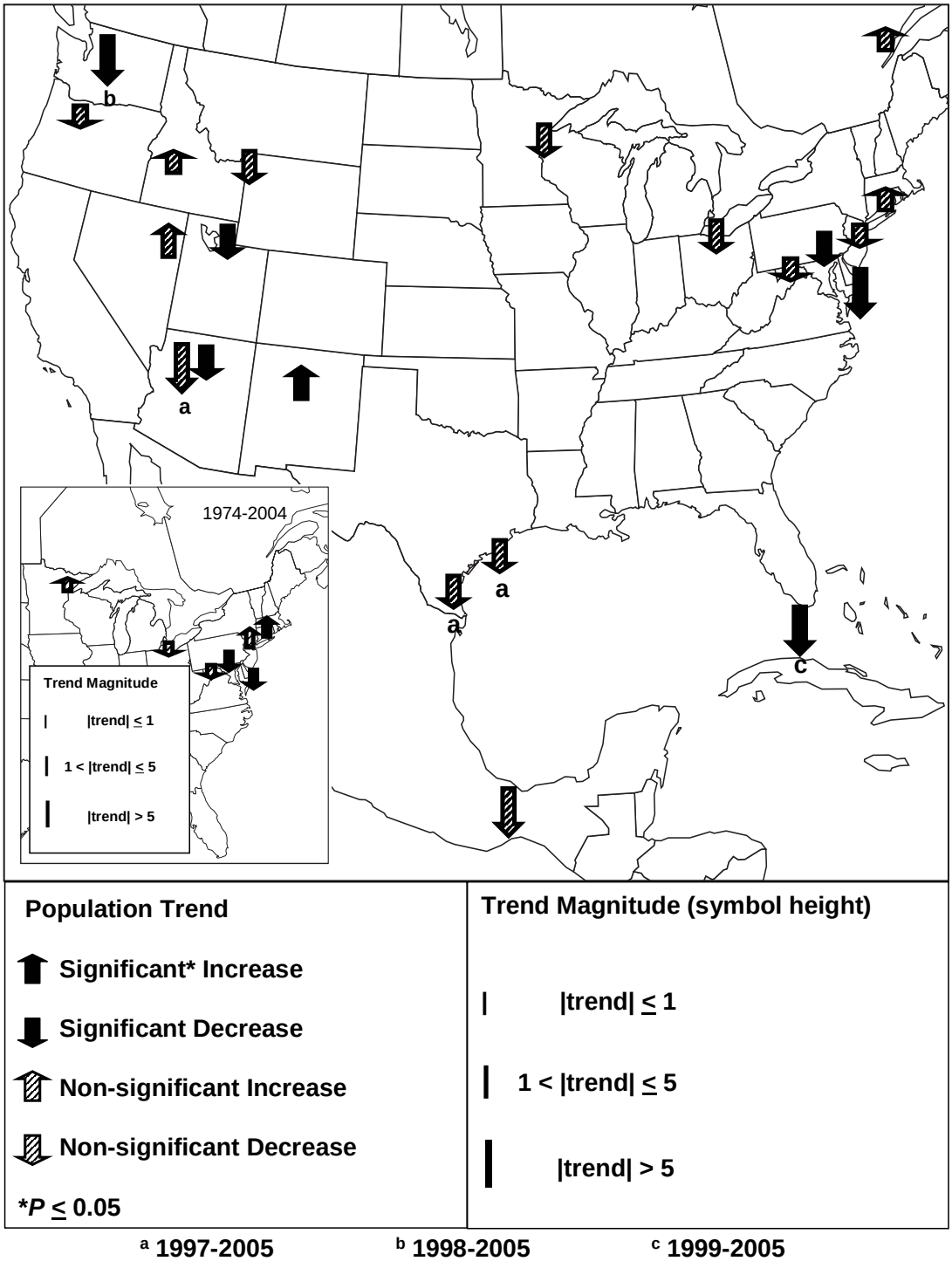

Figure 1. Population trends for Sharp-shinned Hawks at 7 eastern and midwestern (1994–2004) and 8 western (1995–2005) raptor migration counts in North America, and long-term trends (1974–2004) for 7 eastern counts (inset). Trend magnitudes are expressed in percent change per year.